

What is claimed is:

1. A synthetic peptide having an amino acid sequence corresponding to from about 6 amino acids to all of the amino acids encoded by a genetic suppressor element (GSE) produced according to a method for identifying genetic suppressor elements that confer a selectable phenotype upon a eukaryotic cell, wherein the method comprises the steps of:

- (a) synthesizing randomly fragmented cDNA prepared from the total mRNA of a cell to yield DNA fragments;
- (b) transferring the DNA fragments to an expression vector to yield a genetic suppressor element library, wherein each of the DNA fragments is operatively linked to a protein translation initiation codon, and wherein the expression vector expresses the DNA fragments in a living eukaryotic cell that is capable of exhibiting the selectable phenotype;
- (c) genetically modifying living cells by introducing the genetic suppressor element library into the living eukaryotic cells;
- (d) isolating or enriching for genetically modified living eukaryotic cells containing genetic suppressor elements that confer the selectable phenotype by selecting cells that express the selectable phenotype;
- (e) obtaining genetic suppressor elements from the genetically modified cells; and
- (f) identifying sense-oriented genetic suppressor elements therein

2. A synthetic peptide having an amino acid sequence corresponding to from about 6 amino acids to all of the amino acids encoded by a genetic suppressor element (GSE) produced according to a method for identifying genetic suppressor elements corresponding to genes that when suppressed by GSEs, confer a selectable phenotype upon a eukaryotic cell, wherein the method comprises the steps of:

- (a) obtaining genomic DNA or a total mRNA population from the cells;
- (b) randomly fragmenting the genomic DNA or synthesizing randomly fragmented cDNA from the total mRNA to produce a population of randomly fragmented DNA fragments;
- (c) ligating the randomly fragmented DNA fragments to synthetic adaptors to produce amplifiable random DNA fragments;

- (d) amplifying the amplifiable random DNA fragments to provide a mixture of amplified DNA fragments;
 - (e) cloning the mixture of amplified DNA fragments into a suitable expression vector to produce a random fragment expression library;
 - (f) transferring the random fragment expression library into appropriate target cells;
 - (g) isolating or enriching for genetically modified living cells containing a selectable phenotype-conferring genetic suppressor element by selecting or enriching for cells that express the selectable phenotype; and
 - (h) recovering the genetic suppressor elements from the genetically-modified target cells having the selectable phenotype; and
- (I) identifying sense-oriented genetic suppressor elements therein

3. A synthetic peptide having an amino acid sequence comprising from about 6 amino acids to all of the amino acids encoded by a genetic suppressor element produced according to a method for identifying genetic suppressor elements that confer upon a eukaryotic cell resistance to one or more chemotherapeutic drugs, wherein the method comprises the steps of:

- (a) obtaining random DNA fragments of a gene associated with sensitivity to chemotherapeutic drugs;
- (b) transferring the random DNA fragments to an expression vector to yield a genetic suppressor element library, wherein each of the random DNA fragments is operatively linked to a protein translation initiation codon, and wherein the expression vector is capable of expressing the DNA fragments in a living eukaryotic cell that is susceptible of inhibitory effects of a chemotherapeutic drug;
- (c) genetically modifying living eukaryotic cells by introducing the genetic suppressor element library into the living cells;
- (d) isolating or enriching for genetically modified living cells containing chemotherapeutic drug resistance-conferring genetic suppressor elements by selecting cells in the presence of a chemotherapeutic drug, and;
- (e) obtaining genetic suppressor elements from the genetically modified eukaryotic cells; and

(f) identifying sense-oriented genetic suppressor elements therein

4. A synthetic peptide according to claim 1 having an amino acid sequence comprising from about 6 amino acids to all of the amino acids encoded by a genetic suppressor element identified by Seq. ID No. 2-5, 9, 11, 12, 16 or 17.

5. A synthetic peptide according to Claim 1, wherein the selectable phenotype is resistance in a eukaryotic cell to one or more chemotherapeutic drugs, and wherein the GSE comprises a portion of a protein otherwise not recognized as being responsible for said selectable phenotype.

6. A synthetic peptide according to Claim 2, wherein the selectable phenotype is resistance in a eukaryotic cell to one or more chemotherapeutic drugs, and wherein the GSE comprises a portion of a gene otherwise not recognized as being responsible for said selectable phenotype.

7. A synthetic peptide according to Claim 3, wherein the selectable phenotype is resistance in a eukaryotic cell to one or more chemotherapeutic drugs, and wherein the genetic suppressor element comprises a portion of a gene otherwise not recognized as being responsible for said selectable phenotype.

8. A synthetic peptide having an amino acid sequence corresponding to from about amino acids to all of the amino acids encoding a genetic suppressor element that is produced according to a method for identifying genetic suppressor elements that confer a selectable phenotype upon a eukaryotic cell, wherein the method comprises the steps of:

- (a) synthesizing randomly fragmented cDNA prepared from the total mRNA of a cell to yield DNA fragments;
- (b) transferring the DNA fragments to an expression vector to yield a genetic suppressor element library, wherein each of the DNA fragments is operatively linked to a protein

translation initiation codon, and wherein the expression vector expresses the DNA fragments in a living eukaryotic cell that is capable of exhibiting the selectable phenotype;

(c) genetically modifying living cells by introducing the genetic suppressor element library into the living eukaryotic cells;

(d) isolating or enriching for genetically modified living eukaryotic cells containing genetic suppressor elements that confer the selectable phenotype by selecting cells that express the selectable phenotype;

(e) obtaining the genetic suppressor element from the genetically modified cells; and

(f) identifying sense-oriented genetic suppressor elements therein,

wherein the GSE comprises a portion of a nucleic acid selected from the group consisting of nucleic acids identified by Seq. ID Nos. 2-5, 9, 11, 12, 16 or 17, wherein said peptide disrupts an activity of a protein produced by the cell.